

Substantiation of Students' Physical Development



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Abstract

A unified set of age and gender one-dimensional centile tables of students' physical development assessment has been developed and proposed (on the example of Nizhny Novgorod region).

Mini Review

According to the Russian Federation Government Resolution No. 916 from 29.12.2001 "On all-Russian system of monitoring of physical health, physical development of children, adolescents and young people" regular collection and analysis of information necessary for making management decisions on health improvement must be provided [1]. For the purposes of objective self-control of the state and dynamics of students' physical development (PhDev) a unified set of assessment tables should be developed. The purpose of the study is to substantiate and elaborate standards of physical development of students (on the example of Nizhny Novgorod region).

Methods and Organization of Research

The study was conducted on the basis of Health Centers in 2012-2016 by the generalized method among 8450 students (2420 boys and 6030 girls) aged 17-25. Measurements included determination of body length (BL), body mass (BM), chest circumference (ChCir), vital (lung) capacity (VC), right and left hand dynamometry (RHD and LHD), systolic and diastolic blood pressure (SBP and DBP), heart rate (HR), Stange's test (timed inspiratory capacity) and Hench's test (timed expiratory capacity) the estimated indicators: body mass index (BM/BL²), power index (RHD/BM) and life index (VC/BM).

Results & Discussion

The analysis of parameters of students' development revealed ambiguous, but statistically significant dynamics of deviations from standards developed in the 80s [2] and the distribution of physical development indexes - body length (BL), body mass (BM) and chest circumference (ChCir)-towards outermost variants; lung capacity, systolic and diastolic blood

pressure indicators are characterized by right-hand asymmetry; right and left hand dynamometry (RHD and LHD) indicators as well as the indicators of Stange's and Hench's test-by left-sided asymmetry. The results of prospective studies show the peculiarities of gender tendencies in individual achievement of a definitive stage of development, connected with the age of admission to the University and way of life. For the development of the assessment tables following age/gender groups are defined: 17,18,19,20 years; a united group-21 years and older. The manifestation of the asymmetry of all assessments of morphological and functional indicators has determined the choice of non-parametric centile method for the submission of tables of normative materials.

Conclusion

Physical development of students undergoes significant changes during the period of University studies. The asymmetric distribution of centile estimates and the age characteristics of morphologic and functional indicators stipulate the formulation of standards of physical development of students according to 14 morphological parameters presented in one-dimensional centile scales [3].

References

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